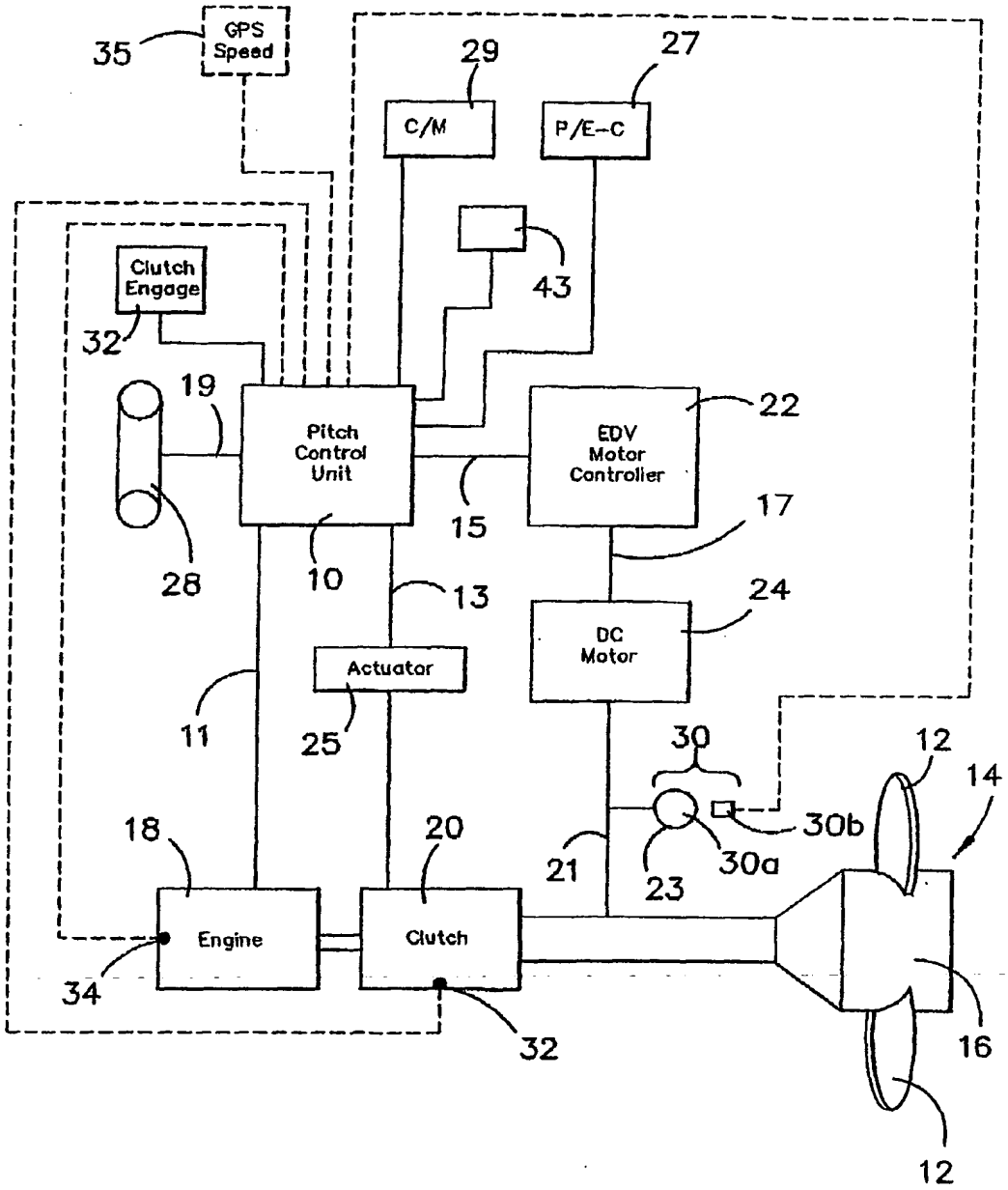
GPS Speed
35
29
C/M
27
P/E-C
43
Clutch Engage
32
19
Pitch Control Unit
22
EDV Motor Controller
15
17
28
10
13
24
DC Motor
Actuator
11
25
30
12
14
30b
18
20
21
23
30a
Engine
Clutch
34
32
16
12

FIGURE 1

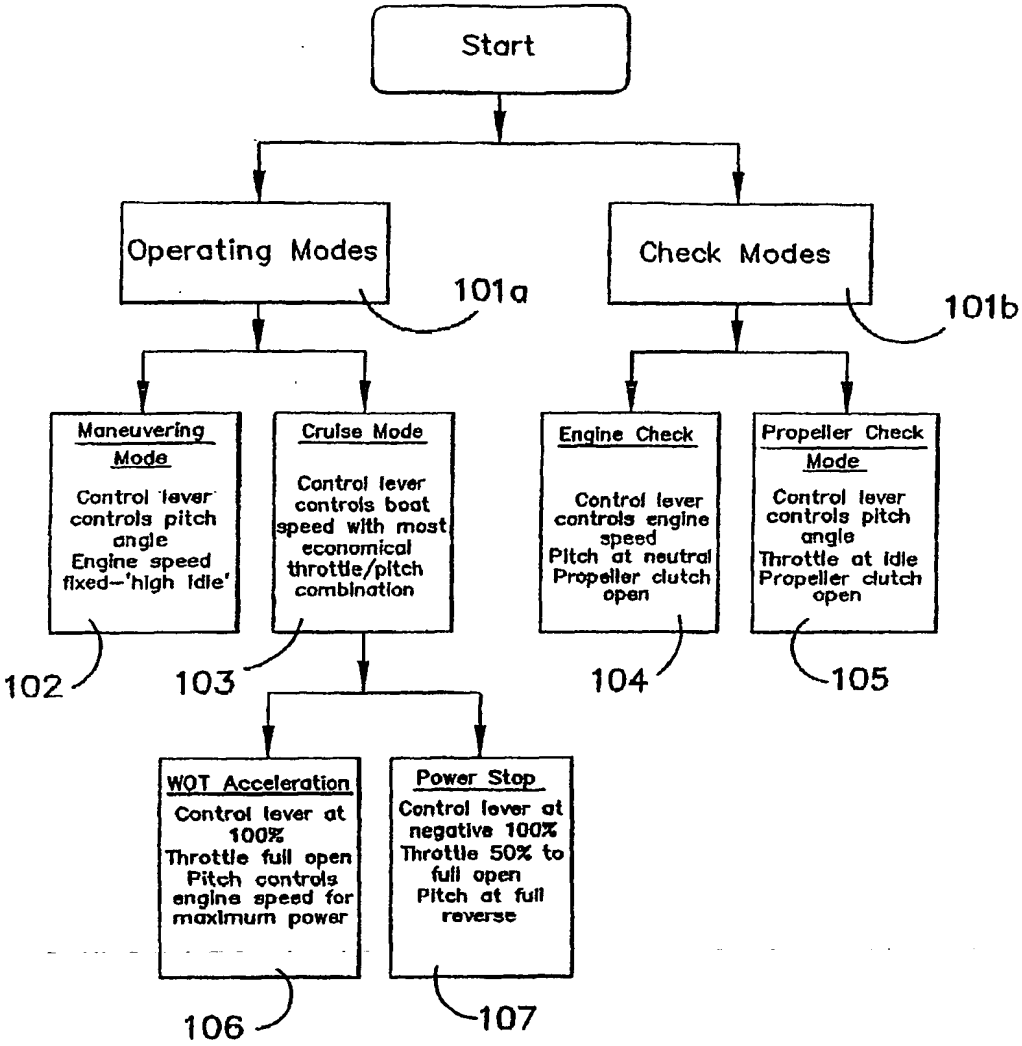
Start
Operating Modes
101a
Check Modes
101b
Maneuvering Mode
Control lever controls pitch angle
Engine speed fixed–'high idle'
102
Cruise Mode
Control lever controls boat speed with most economical throttle/pitch combination
103
Engine Check
Control lever controls engine speed
Pitch at neutral
Propeller clutch open
104
Propeller Check Mode
Control lever controls pitch angle
Throttle at idle
Propeller clutch open
105
WOT Acceleration
Control lever at 100%
Throttle full open
Pitch controls engine speed for maximum power
106
Power Stop
Control lever at negative 100%
Throttle 50% to full open
Pitch at full reverse
107

FIGURE 1A

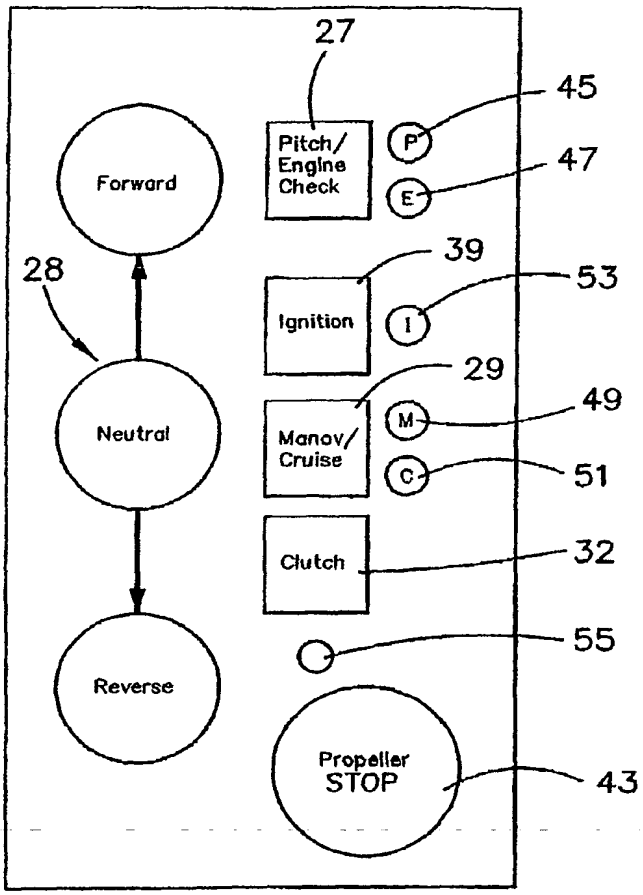
27
45
Forward
Pitch/
Engine
Check
P
47
E
39
28
53
Ignition
I
29
Neutral
Manov/
Cruise
49
M
C
51
Clutch
32
55
Reverse
Propeller
STOP
43

FIGURE 2

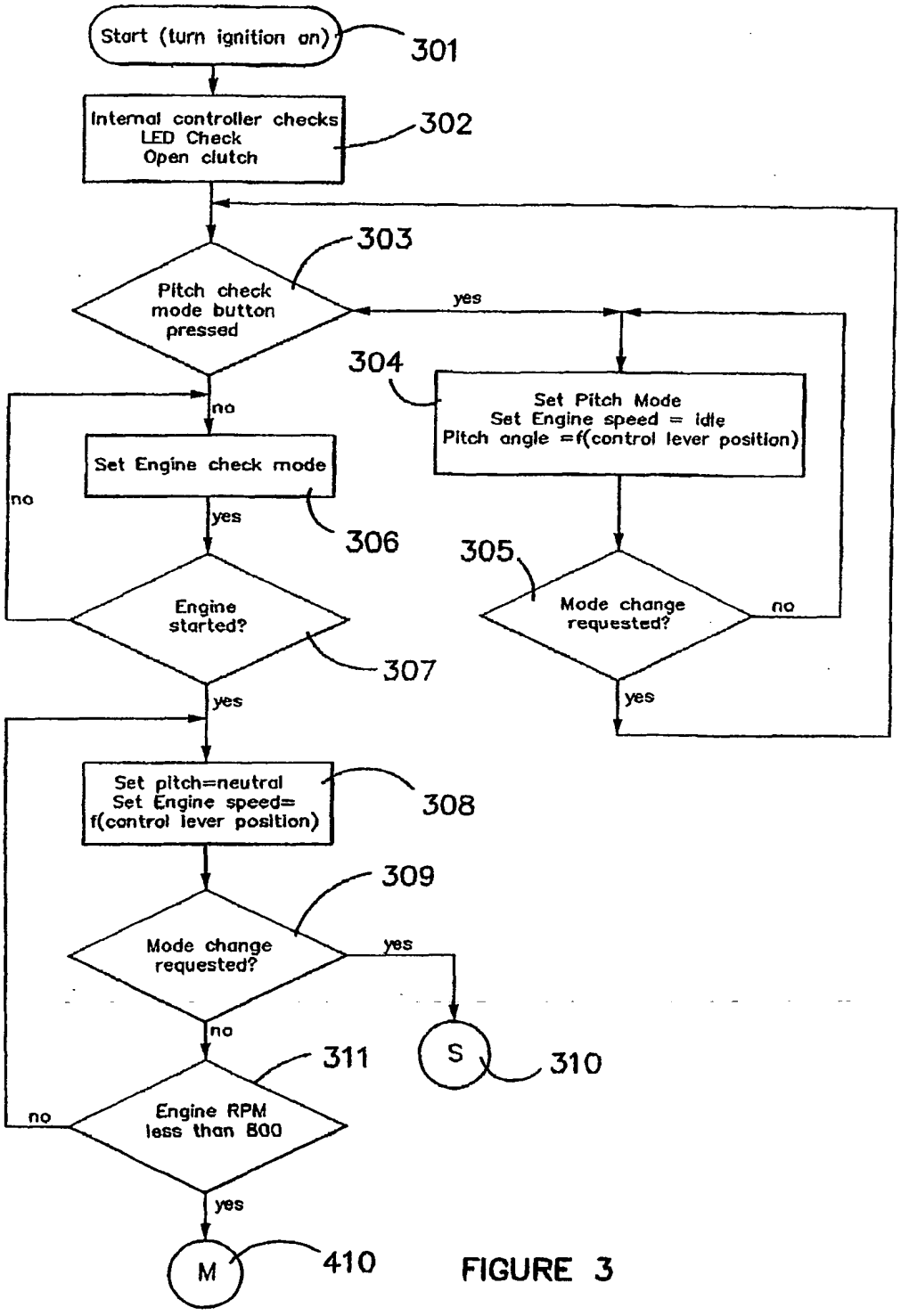
Start (turn ignition on)
301
Internal controller checks
LED Check
Open clutch
302
303
Pitch check mode button pressed
yes
304
Set Pitch Mode
Set Engine speed = idle
Pitch angle =f(control lever position)
no
Set Engine check mode
306
yes
no
305
Engine started?
307
Mode change requested?
no
yes
yes
Set pitch=neutral
Set Engine speed= f(control lever position)
308
309
Mode change requested?
yes
no
S
310
311
Engine RPM less than 800
no
yes
M
410

FIGURE 3

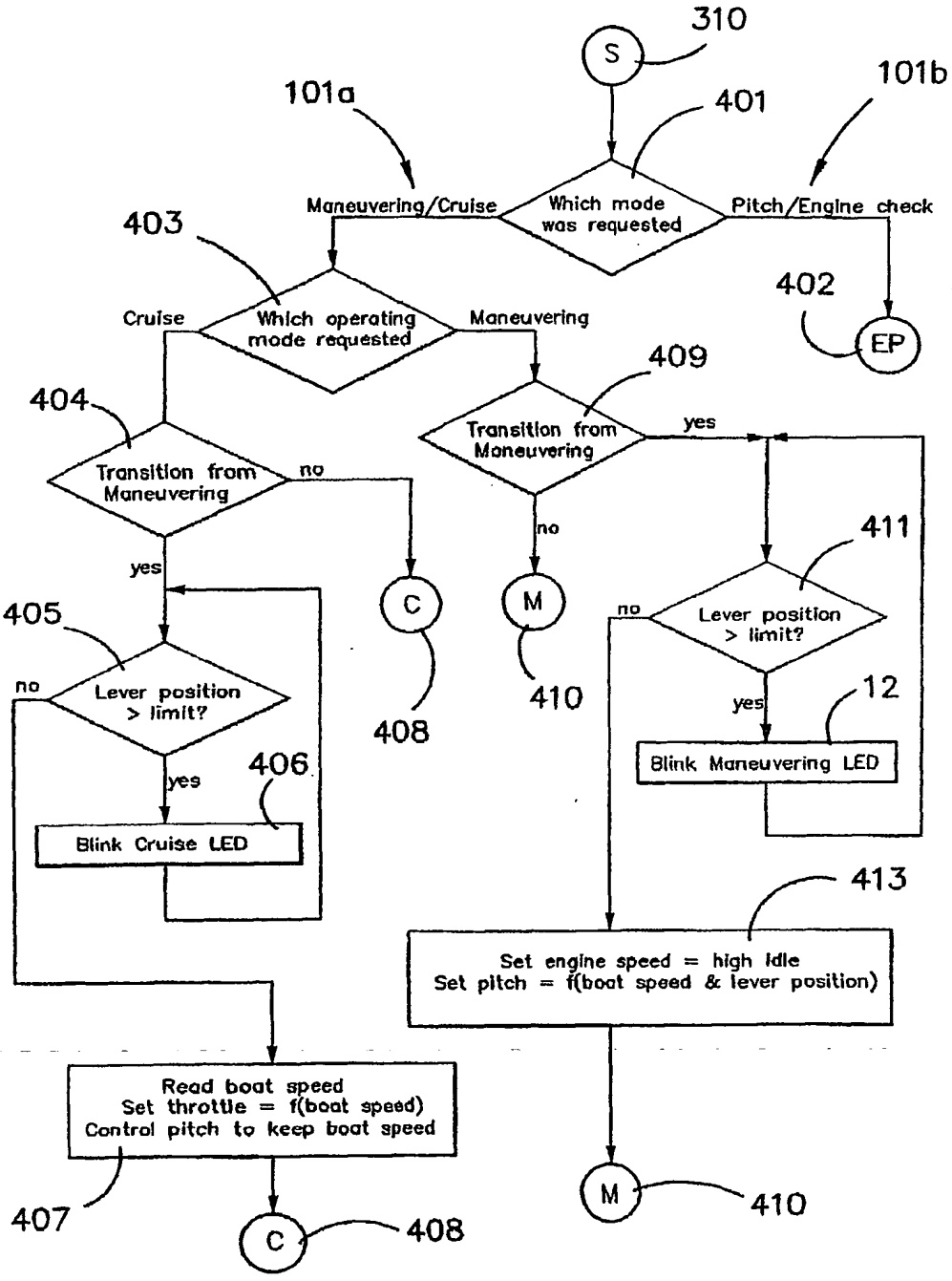
310
S
101a
401
101b
Maneuvering/Cruise
Which mode was requested
Pitch/Engine check
403
402
Cruise
Which operating mode requested
Maneuvering
EP
409
404
Transition from Maneuvering
yes
Transition from Maneuvering
no
no
411
yes
C
M
405
no
Lever position > limit?
no
Lever position > limit?
410
12
408
yes
406
yes
Blink Maneuvering LED
Blink Cruise LED
413
Set engine speed = high idle
Set pitch = f(boat speed & lever position)
Read boat speed
Set throttle = f(boat speed)
Control pitch to keep boat speed
M
410
407
C
408

FIGURE 4

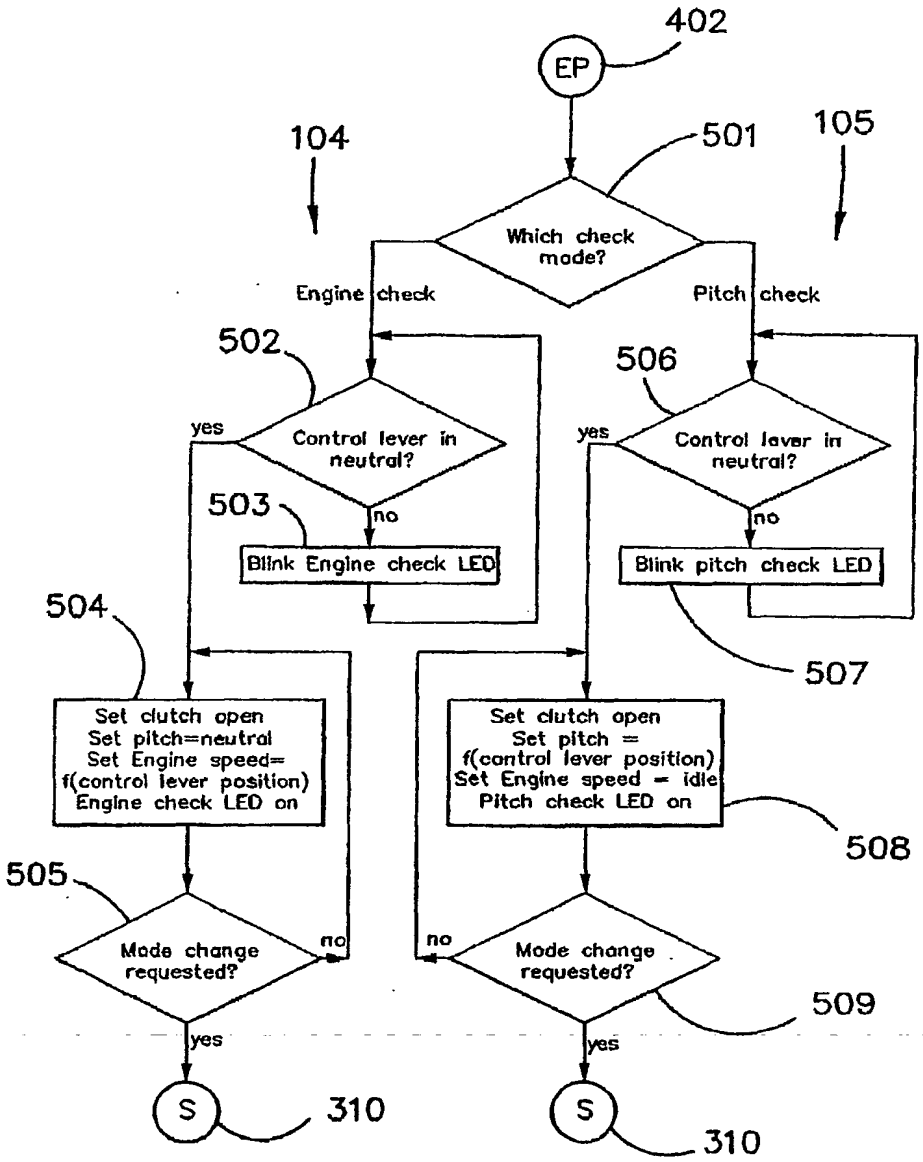
402
EP
104
501
105
Which check mode?
Engine check
Pitch check
502
506
yes
Control lever in neutral?
yes
Control lever in neutral?
503
no
Blink Engine check LED
no
Blink pitch check LED
504
507
Set clutch open
Set pitch=neutral
Set Engine speed=
f(control lever position)
Engine check LED on
Set clutch open
Set pitch =
f(control lever position)
Set Engine speed = idle
Pitch check LED on
508
505
Mode change requested?
no
no
Mode change requested?
509
yes
yes
S
310
S
310

FIGURE 5

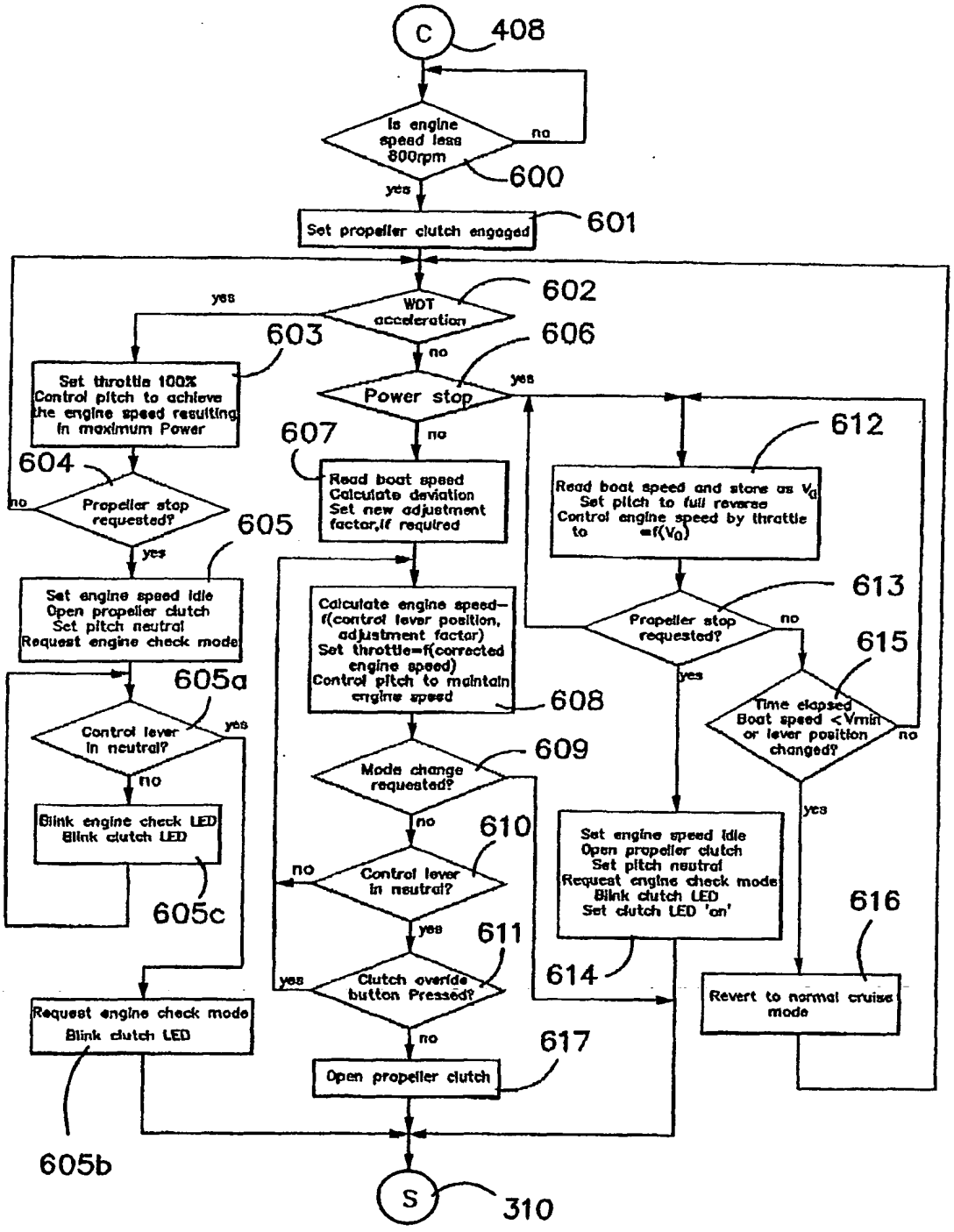
C
408
Is engine speed less 800rpm
no
600
yes
Set propeller clutch engaged
601
WOT acceleration
602
yes
603
Set throttle 100% Control pitch to achieve the engine speed resulting in maximum Power
no
606
Power stop
yes
no
607
Read boat speed Calculate deviation Set new adjustment factor,if required
604
no
Propeller stop requested?
yes
605
Set engine speed idle Open propeller clutch Set pitch neutral Request engine check mode
605a
Control lever in neutral?
yes
no
Blink engine check LED Blink clutch LED
605c
Request engine check mode Blink clutch LED
605b
Calculate engine speed=f(control lever position, adjustment factor) Set throttle=f(corrected engine speed) Control pitch to maintain engine speed
608
609
Mode change requested?
no
610
Control lever in neutral?
no
yes
611
Clutch overide button Pressed?
yes
no
617
Open propeller clutch
612
Read boat speed and store as V_0 Set pitch to full reverse Control engine speed by throttle to =f(V_0)
613
Propeller stop requested?
no
yes
615
Time elapsed Boat speed <Vmin or lever position changed?
no
yes
Set engine speed idle Open propeller clutch Set pitch neutral Request engine check mode Blink clutch LED Set clutch LED 'on'
614
616
Revert to normal cruise mode
S
310

FIGURE 6

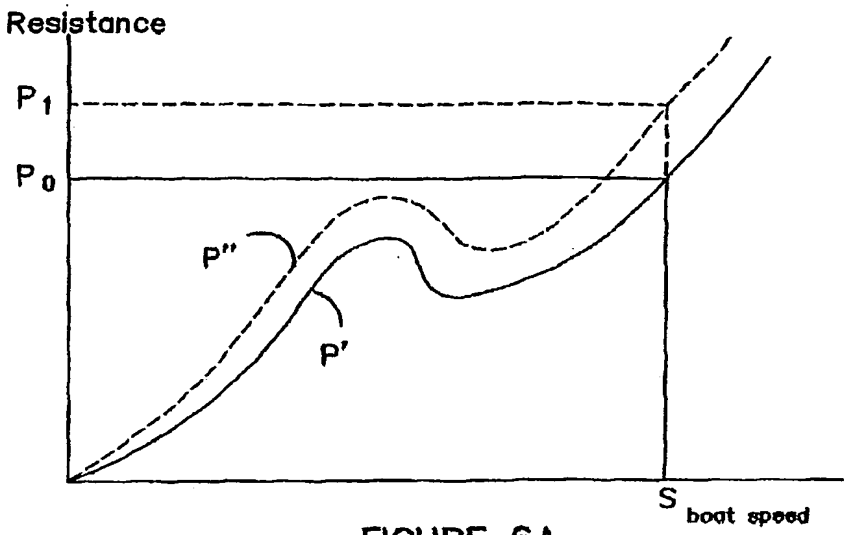

FIGURE 6A

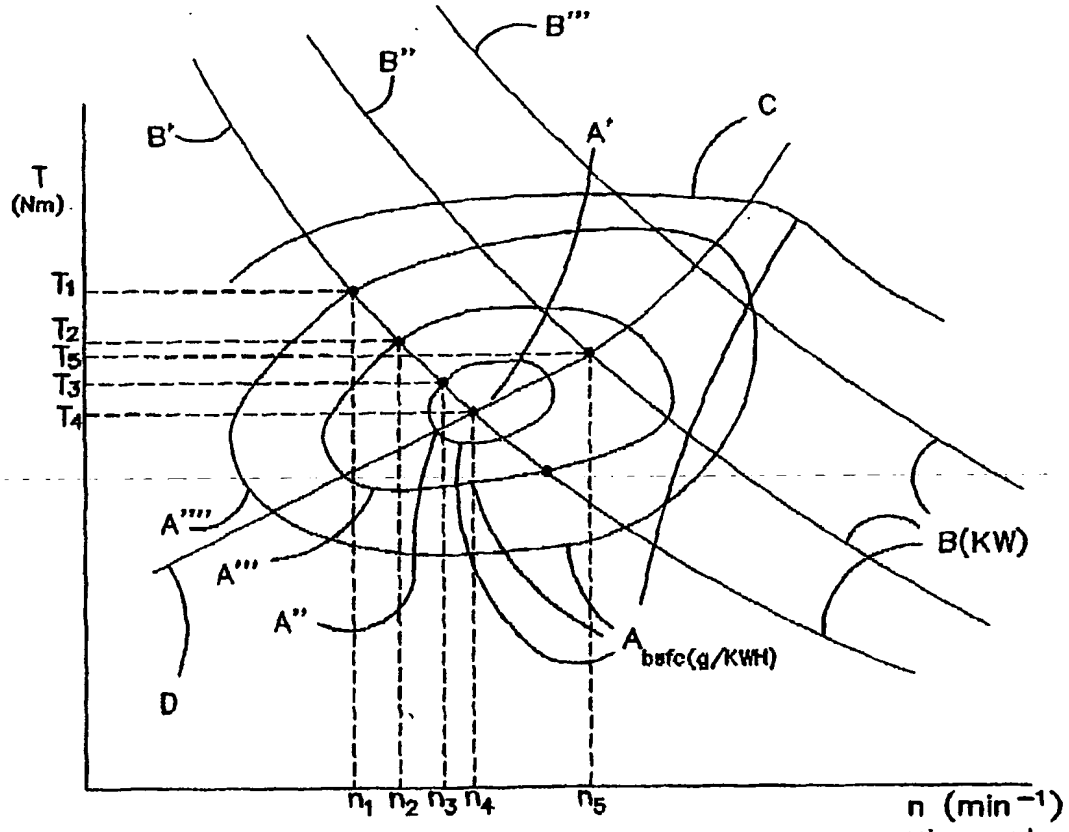

FIGURE 6B

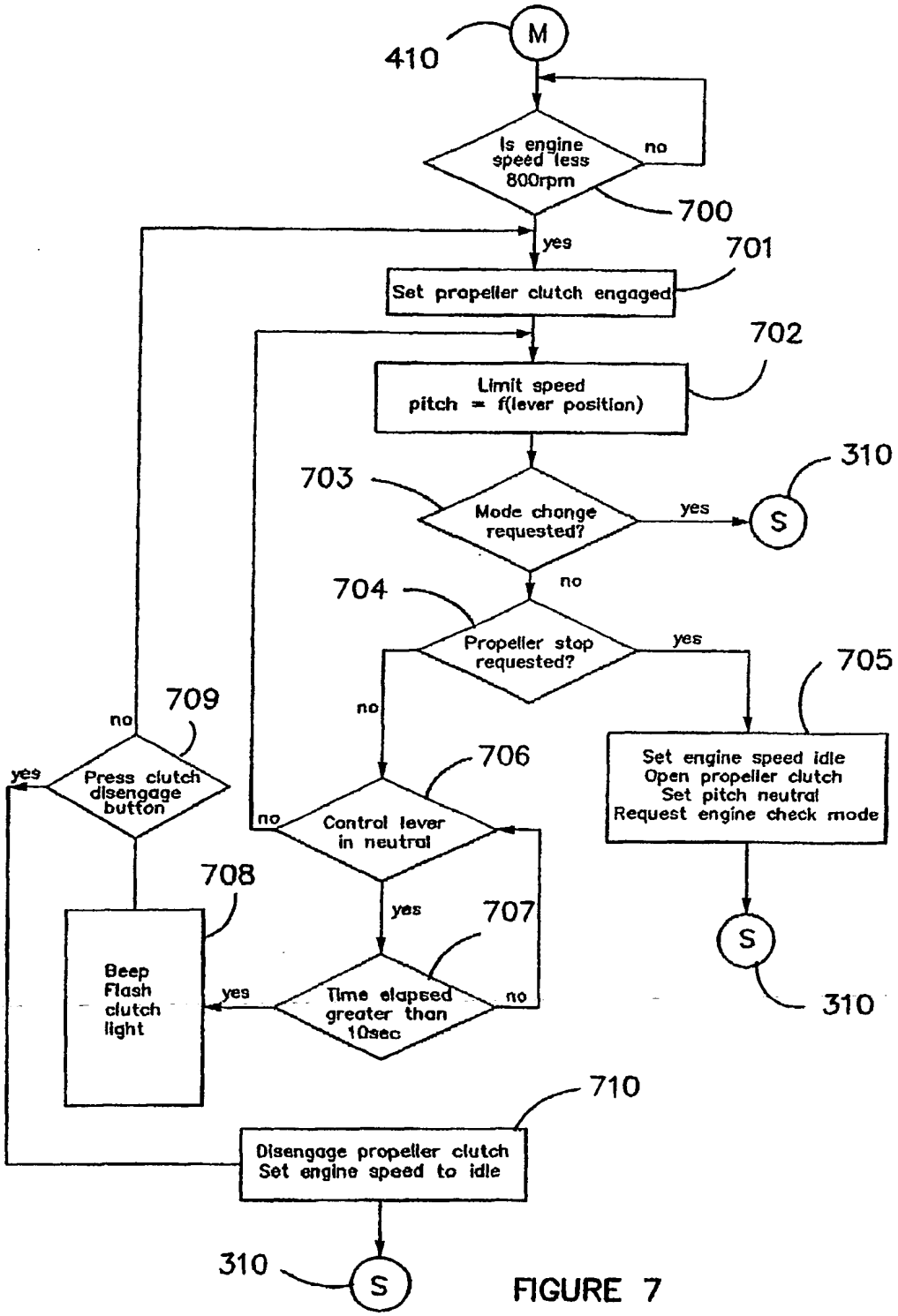
M
410
Is engine speed less 800rpm
no
700
yes
701
Set propeller clutch engaged
702
Limit speed pitch = f(lever position)
703
Mode change requested?
yes
310
S
no
704
Propeller stop requested?
yes
705
no
709
no
Press clutch disengage button
yes
706
Control lever in neutral
no
Set engine speed idle
Open propeller clutch
Set pitch neutral
Request engine check mode
708
Beep
Flash
clutch
light
yes
707
Time elapsed greater than 10sec
yes
no
S
310
710
Disengage propeller clutch
Set engine speed to idle
310
S

FIGURE 7

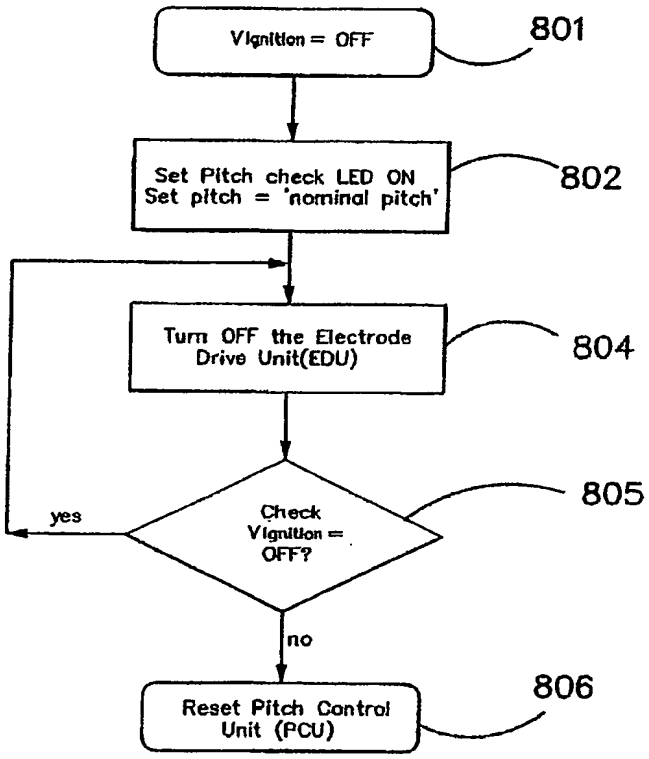
Vignition = OFF
801
Set Pitch check LED ON
Set pitch = 'nominal pitch'
802
Turn OFF the Electrode
Drive Unit(EDU)
804
Check
Vignition =
OFF?
805
yes
no
Reset Pitch Control
Unit (PCU)
806

FIGURE 8